Missions & Means Framework: Theory

Dr. Paul H. Deitz, Technical Director
Army Materiel Systems Analysis Activity
phd@amsaa.army.mil; 410-278-6598

COL(R) Bruce A. Harris, Dir Trng & Perf
Dynamics Research Corporation
bharris@drc.com; 978-475-9000 x1878

LTC(R) Britt E. Bray, Sen Sys Engr
Dynamics Research Corporation
bbray@drc.com; 913-758-0514

Mr. Jack H. Sheehan, PM Knowledge Intgr
DoD DOT&E/C3I & Strategic Systems
jack.Sheehan@osd.mil; 703-681-4031x110

Mr. Alexander B. Hoare, Ofc of Tech Dir
Army Materiel Systems Analysis Activity
ahoare@amsaa.army.mil; 410-278-6625

Ms. Ellen M. Purdy, Dep Dir, Comb Tst Ofc
Office of the PM-FCS
epurdy@darpa.mil; 571-218-4409

1 March 2004

To Make It Work …Need Five Things

1. **Composable Framework and supporting Procedures**
2. **Critical Mass of End-User Content and supporting Access**
3. **Business Model for Life-Cycle Sustainment and supporting Program Elements**
4. **Tools, Utilities and supporting Standards**
5. **Education, Training, and Certification**

Fundamental Missions and Means Framework Principles

Warfare is the most complex and demanding of all human activities. The f must have an explicit, scalable strategy for managing complexity and quan

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- **Interface Operations and Forces through Capabilities and Effects**
- **Separate Cognitive from Physical, Actual from Perceived, Tangible from Intangible:**

A Two-Sided Missions & Means Framework

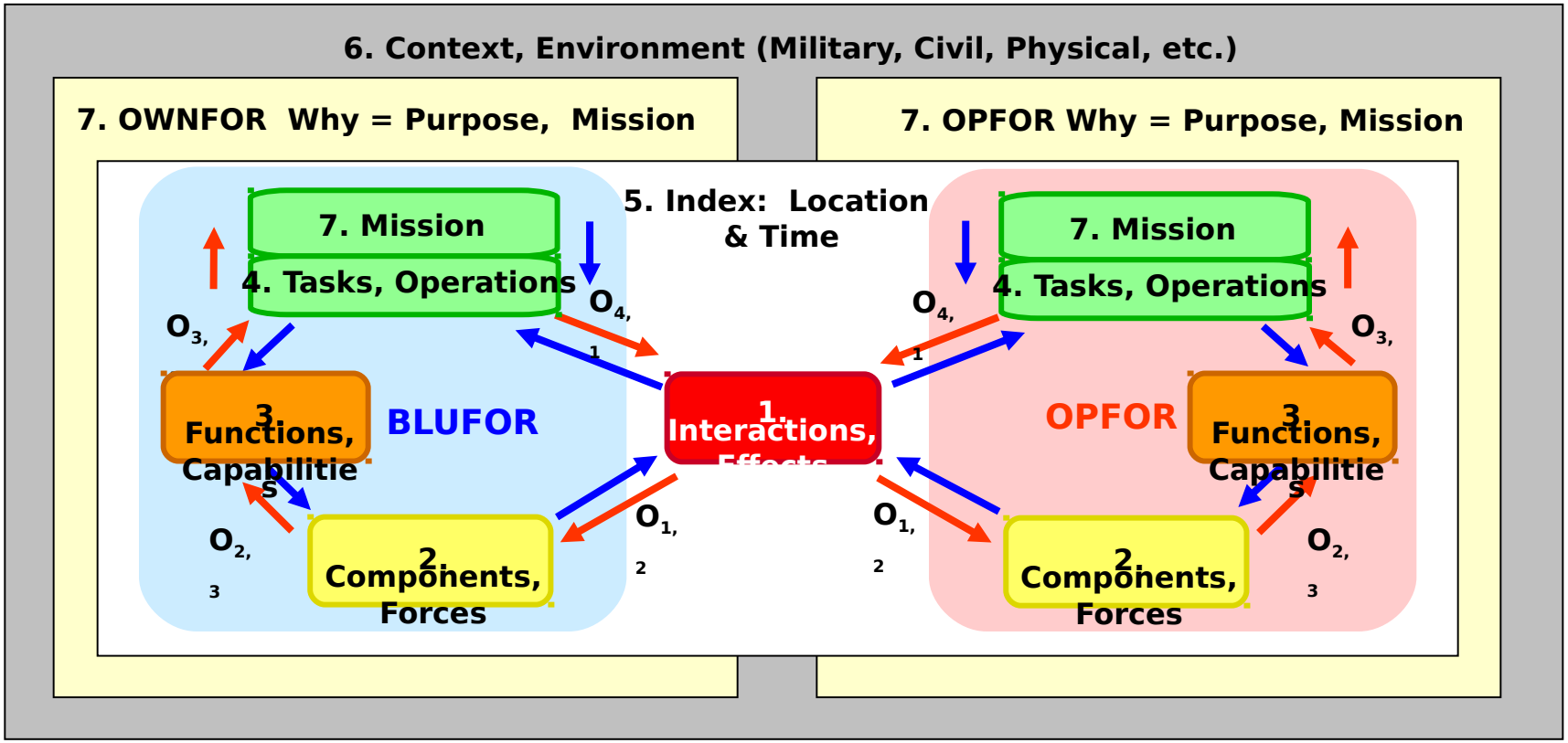
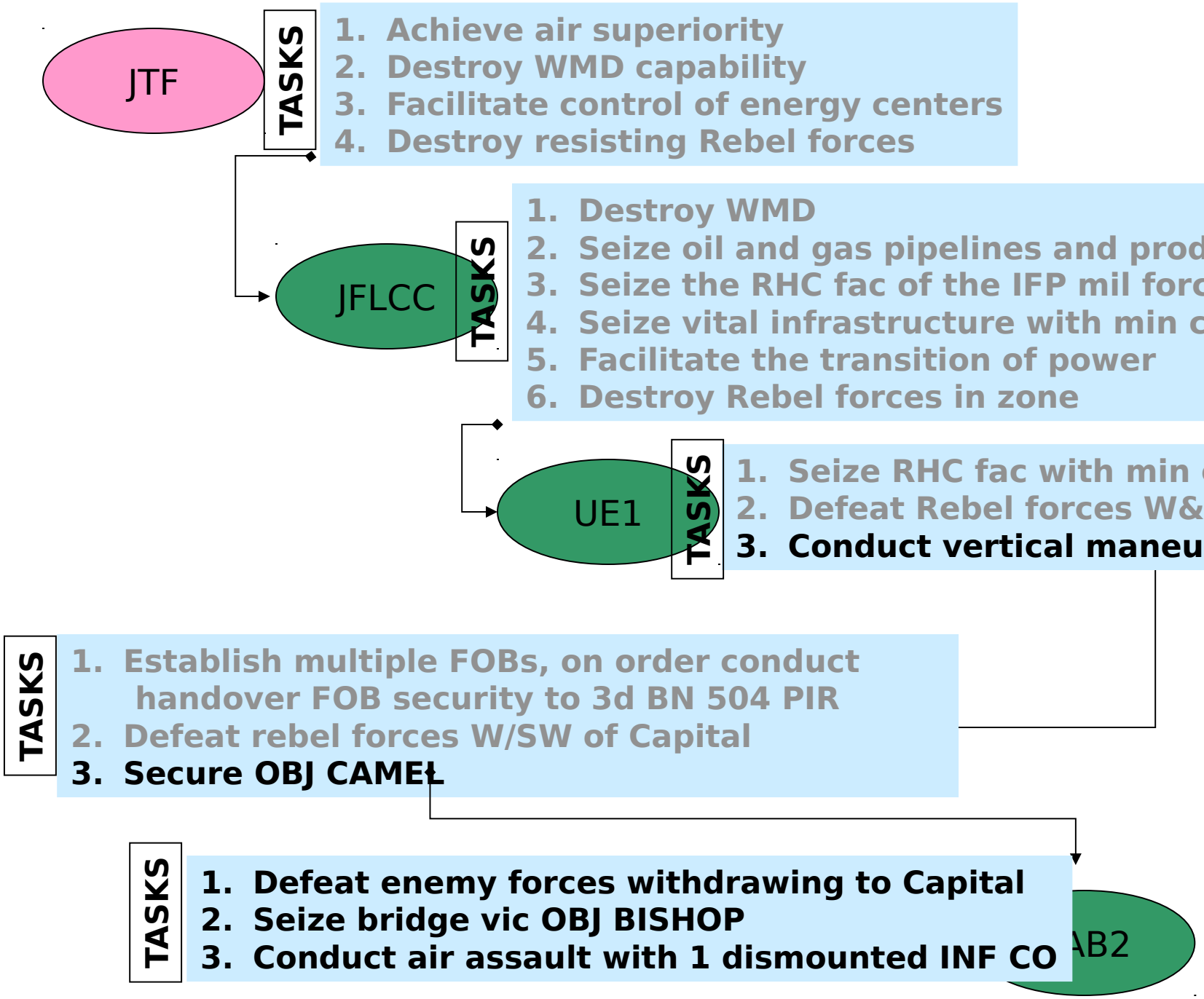


Figure 1


JTF
TASKS
1. Achieve air superiority
2. Destroy WMD capability
3. Facilitate control of energy centers
4. Destroy resisting Rebel forces
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1. Destroy WMD
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1. Seize RHC fac with min coll damag
2. Defeat Rebel forces W&S/W of Cap
3. Conduct vertical maneuver to Cap
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1. Establish multiple FOBs, on order conduct handover FOB security to 3d BN 504 PIR
2. Defeat rebel forces W/SW of Capital
3. Secure OBJ CAMEL
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1. Defeat enemy forces withdrawing to Capital
2. Seize bridge vic OBJ BISHOP
3. Conduct air assault with 1 dismounted INF CO
AB2

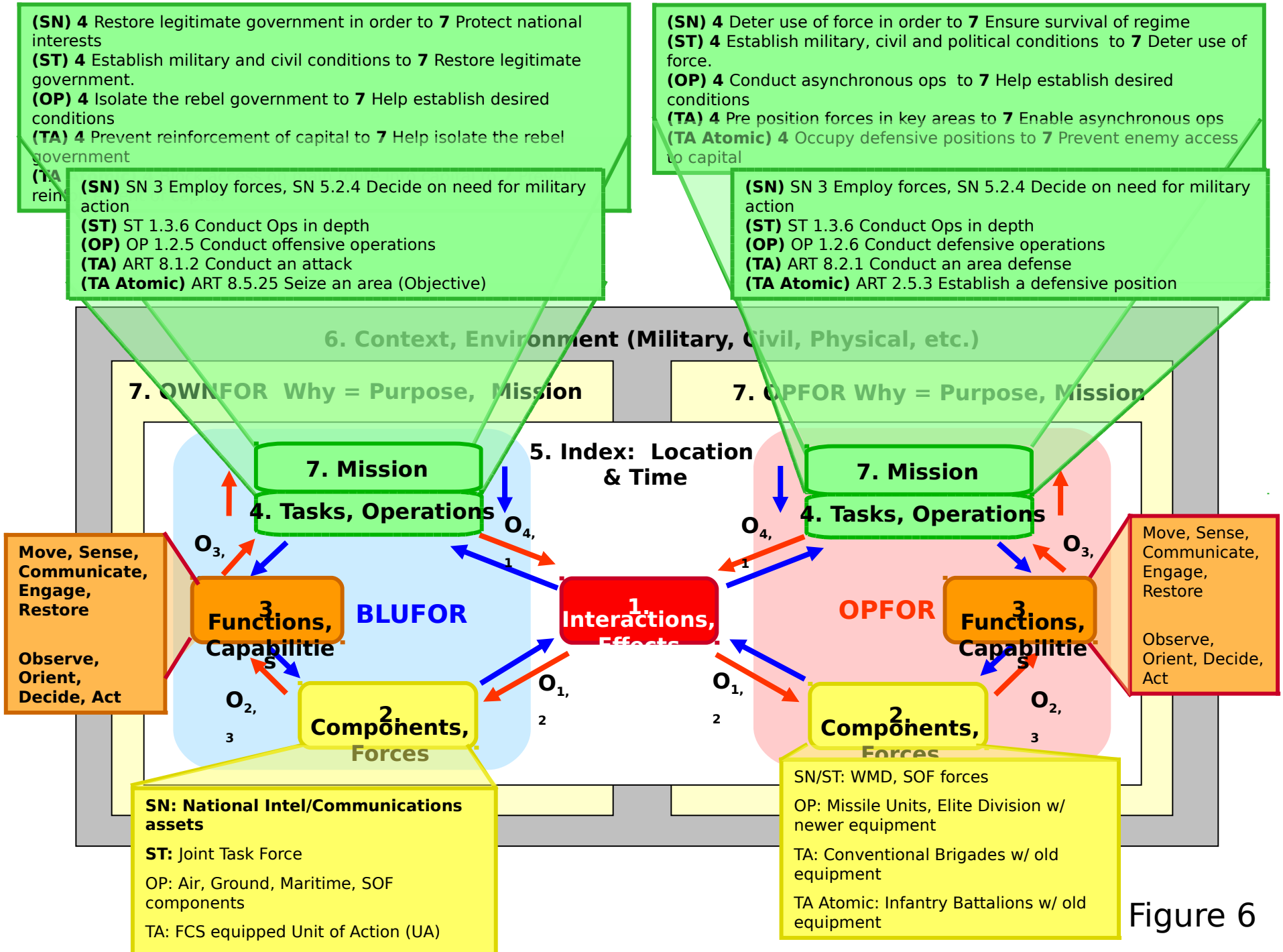
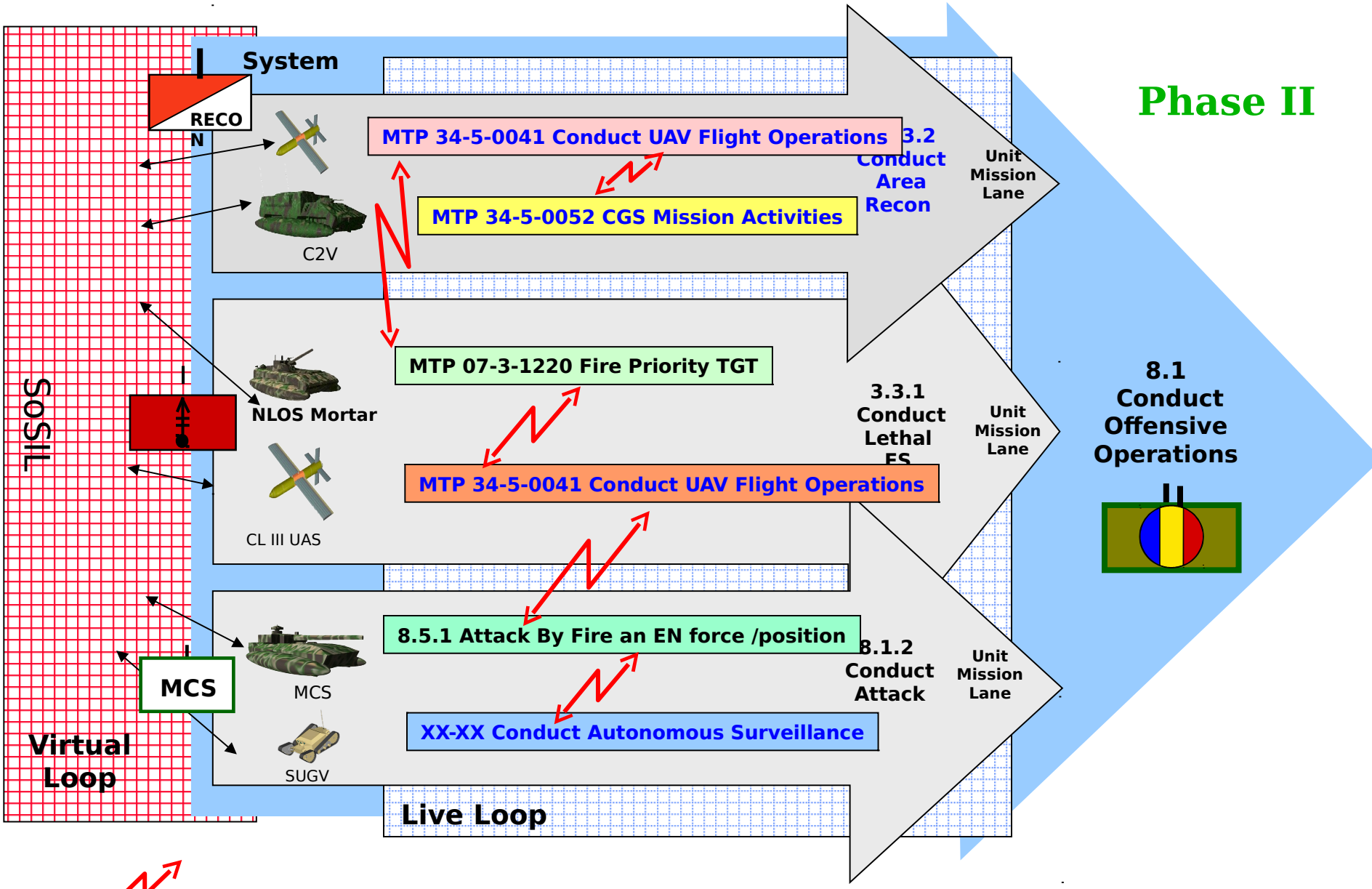
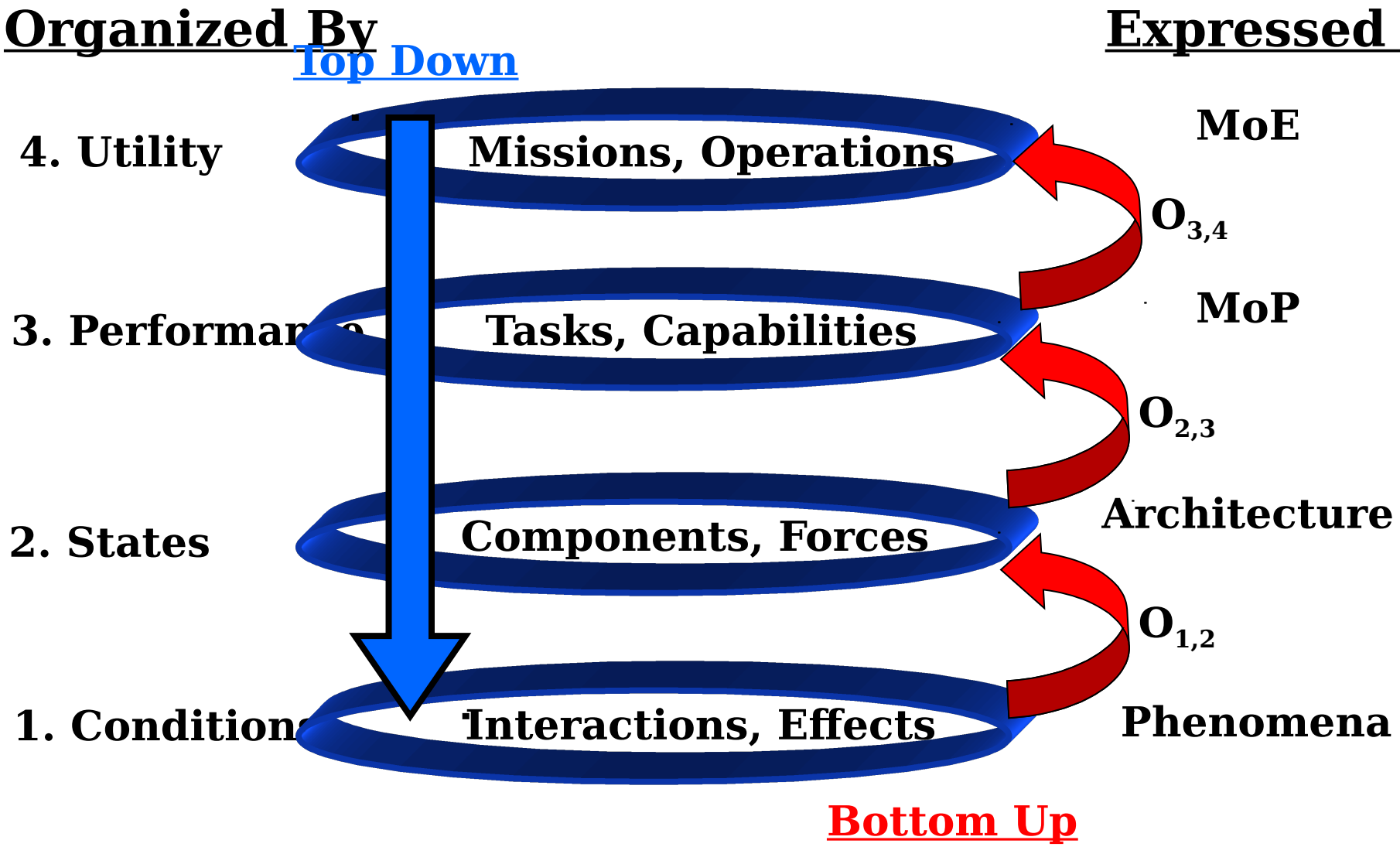

(SN) 4 Restore legitimate government in order to 7 Protect national interests
(ST) 4 Establish military and civil conditions to 7 Restore legitimate government.
(OP) 4 Isolate the rebel government to 7 Help establish desired conditions
(TA) 4 Prevent reinforcement of capital to 7 Help isolate the rebel government
(SN) SN 3 Employ forces, SN 5.2.4 Decide on need for military action
(ST) ST 1.3.6 Conduct Ops in depth
(OP) OP 1.2.5 Conduct offensive operations
(TA) ART 8.1.2 Conduct an attack
(TA Atomic) ART 8.5.25 Seize an area (Objective)
(SN) 4 Deter use of force in order to 7 Ensure survival of regime
(ST) 4 Establish military, civil and political conditions to 7 Deter use of force.
(OP) 4 Conduct asynchronous ops to 7 Help establish desired conditions
(TA) 4 Pre position forces in key areas to 7 Enable asynchronous ops
(TA Atomic) 4 Occupy defensive positions to 7 Prevent enemy access to capital
(SN) SN 3 Employ forces, SN 5.2.4 Decide on need for military action
(ST) ST 1.3.6 Conduct Ops in depth
(OP) OP 1.2.6 Conduct defensive operations
(TA) ART 8.2.1 Conduct an area defense
(TA Atomic) ART 2.5.3 Establish a defensive position
6. Context, Environment (Military, Civil, Physical, etc.)
7. OWNFOR Why = Purpose, Mission
7. OPFOR Why = Purpose, Mission
5. Index: Location & Time
7. Mission
4. Tasks, Operations
3 Functions, Capabilities
2 Components, Forces
1 Interactions, Effects
BLUFOR
OPFOR
O3, 4
O4, 1
O2, 3
O1, 2
Move, Sense, Communicate, Engage, Restore
Observe, Orient, Decide, Act
SN: National Intel/Communications assets
ST: Joint Task Force
OP: Air, Ground, Maritime, SOF components
TA: FCS equipped Unit of Action (UA)
SN/ST: WMD, SOF forces
OP: Missile Units, Elite Division w/ newer equipment
TA: Conventional Brigades w/ old equipment
TA Atomic: Infantry Battalions w/ old equipment

Figure 6

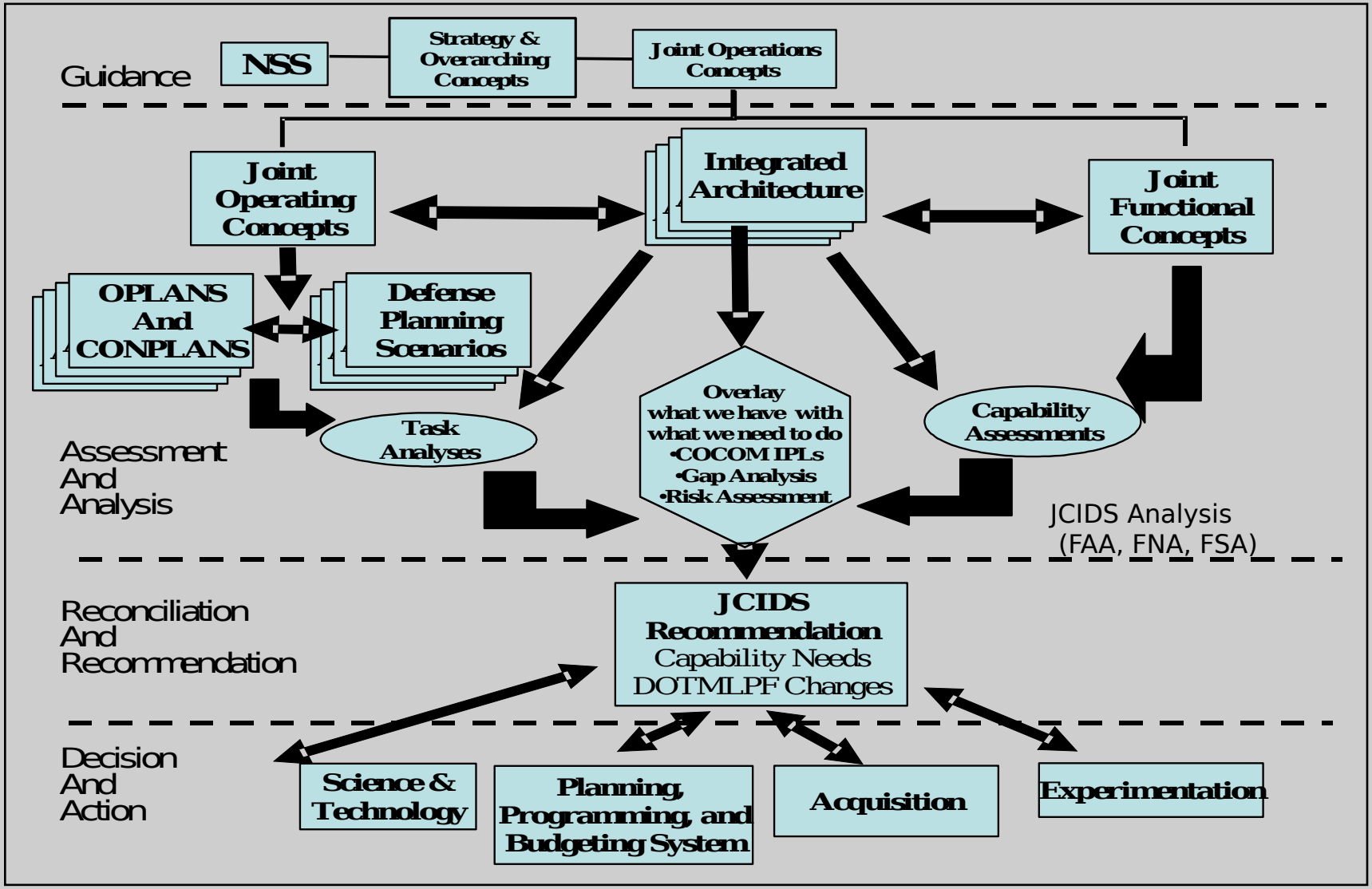
Sample Task Set Applied to Generic OT Model



First Synthesis, Then Employment



CJCSI 3170
Signature Version



Transformation Support

Mission Definition: JCIDS requires formal statement of national security strategy, strategy and overall concept for

MMF records this in the multi-sided (OWNFOR / OPFOR) specifications: L-7 Purpose/Mission referencing L-6 Context/Environment and L-5 Index/Location/Time

Mission Analysis: JCIDS terms FAA – JTS calls METL-based readiness requirements

MMF employs MDMP to derive specified / implied tasks, identify conditions, select measure, and assign standards

Capability Assessment: JCIDS requires a functional concepts decomposition (to do

MMF employs $O_{3,4}S$ synthesis operator to derive "catholically agnostic" decomposition of L-3 Functions/Capabilities based on L-4 Tasks/Operations

Integrated Architectures: JCIDS / DoD 5000.2 require integrated Operational, Systems, and Technical stardards

MMF employs integrated architectures to provide concepts, rules, and technologies to assemble Stocking Perspective parts into Assembly Perspective packages

Mission Evaluation: JCIDS requires an FSA to determine degree to which alternative DOTMLPF solutions do / do

MMF conducts FSA as follows:

- $O_{1,2}E$ Employment operator provides the degraded (or enhanced) states generated by L-1 Effects packages on L-2 Component parts
- $O_{2,3}E$ Employment operator uses architectures to determine L-3 Capability package performance based on L-2

Fundamental Missions and Means Framework Principles

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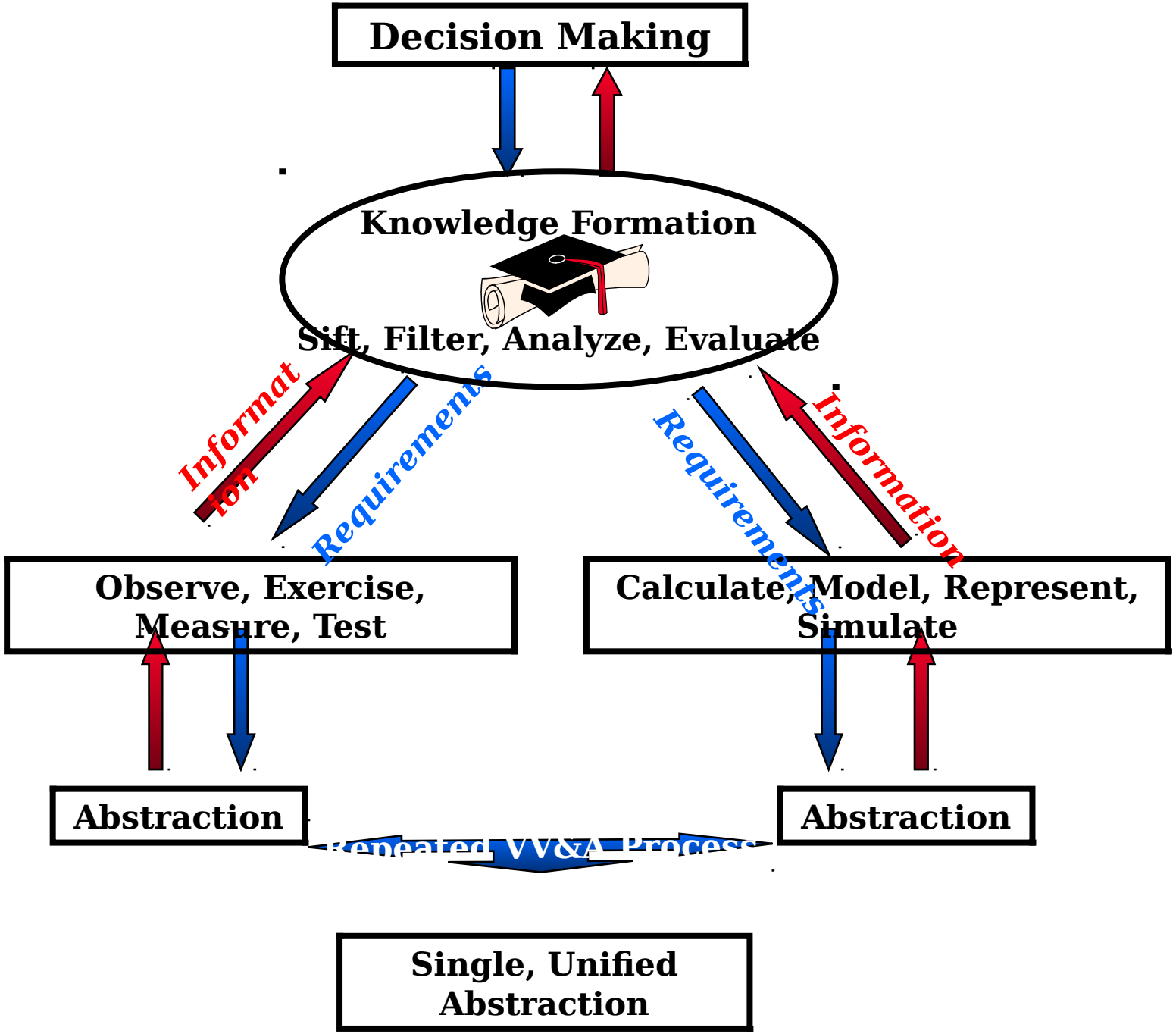
Decision Making
Knowledge Formation
Sift, Filter, Analyze, Evaluate
Information
Requirements
Requirements
Information
Observe, Exercise, Measure, Test
Calculate, Model, Represent, Simulate
Abstraction
Abstraction
Repeated V&V&A Process
Single, Unified Abstraction

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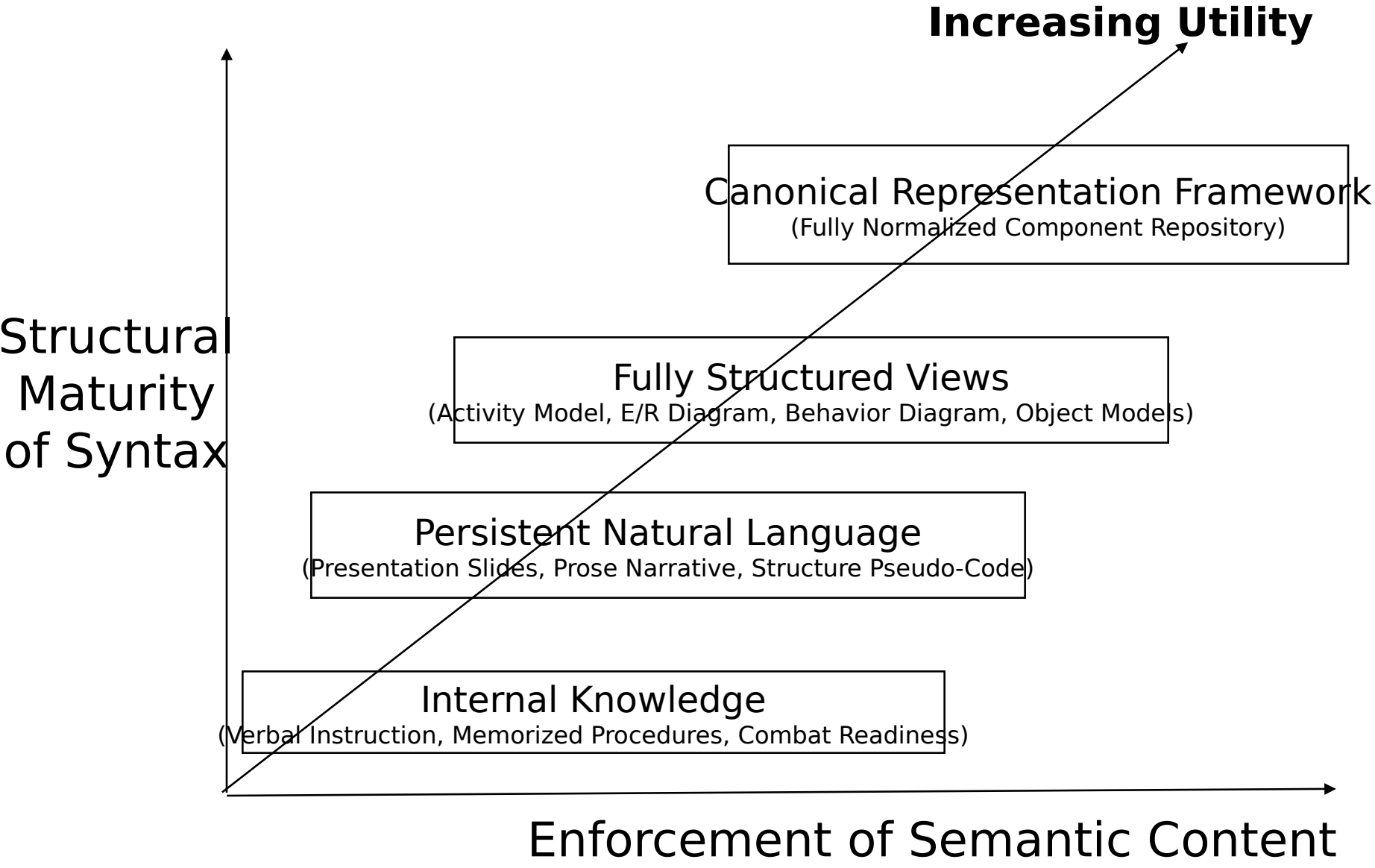
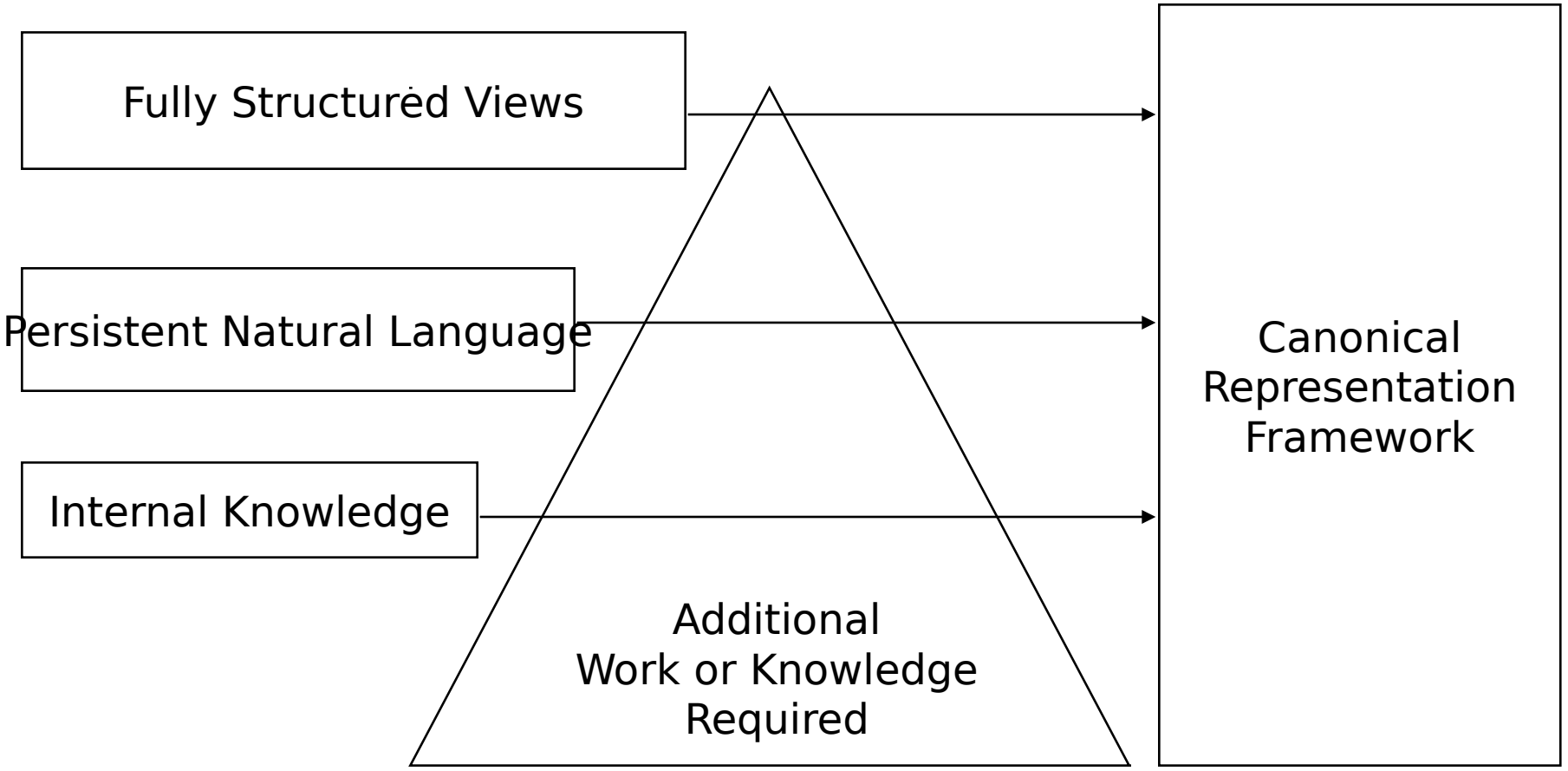
Representation Dimensions


Increasing Utility
Canonical Representation Framework
(Fully Normalized Component Repository)
Structural Maturity of Syntax
Fully Structured Views
(Activity Model, E/R Diagram, Behavior Diagram, Object Models)
Persistent Natural Language
(Presentation Slides, Prose Narrative, Structure Pseudo-Code)
Internal Knowledge
(Verbal Instruction, Memorized Procedures, Combat Readiness)
Enforcement of Semantic Content

Migrating Representations at Multiple Levels of Structural Maturity and Semantic Enforcement



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What We Do Not Show You!

XML-based Semantics and Syntax

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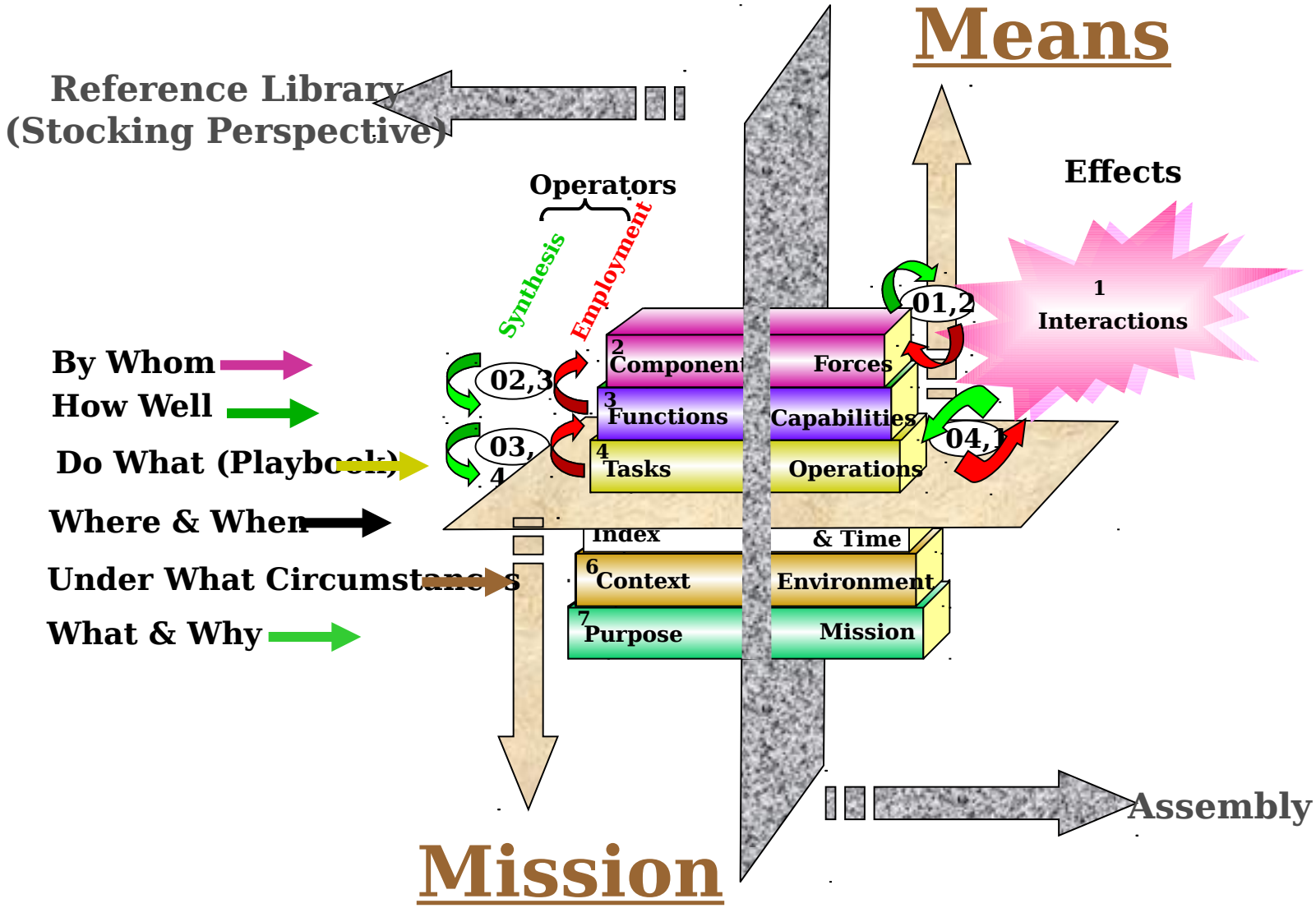
Mission & Means Framework



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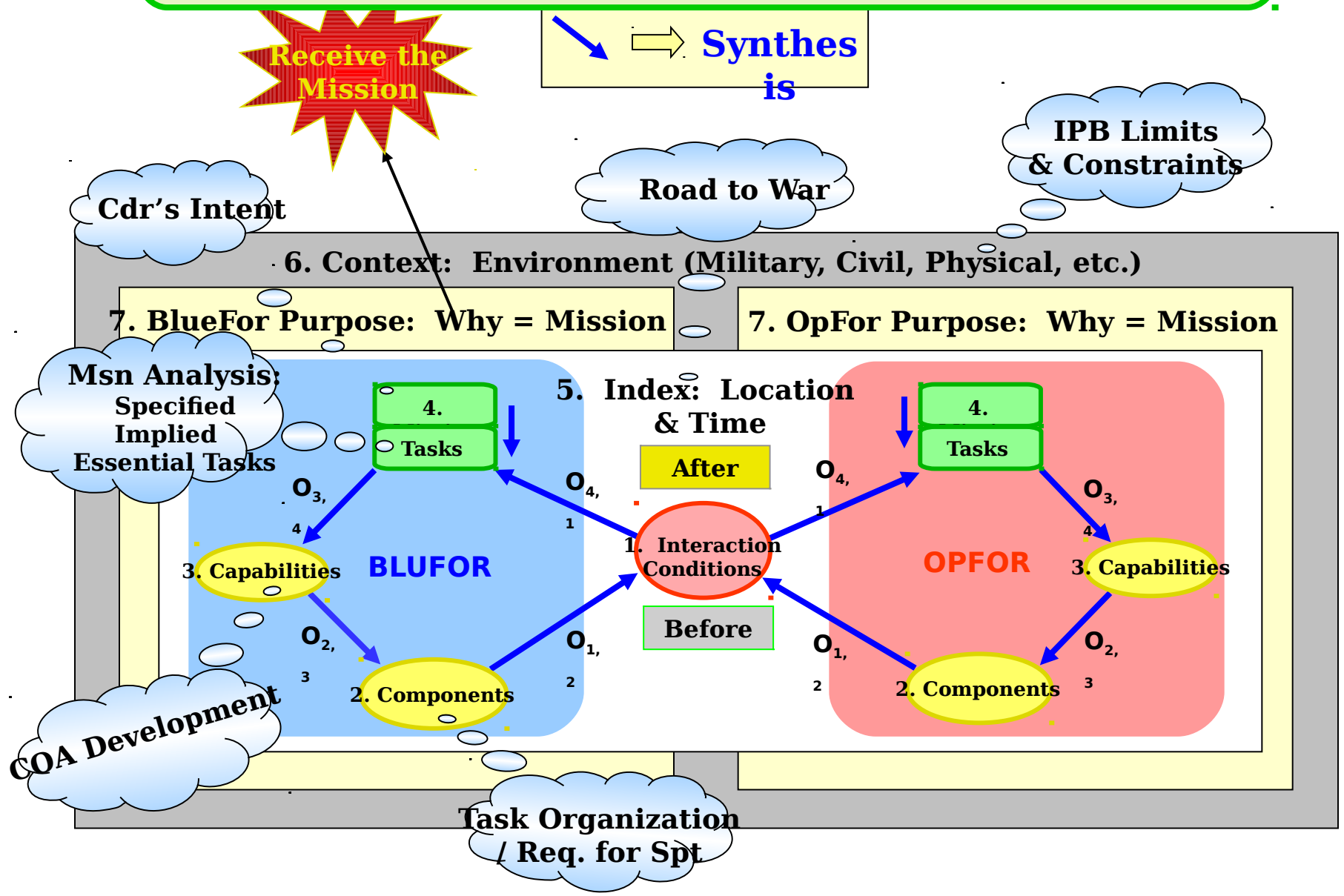
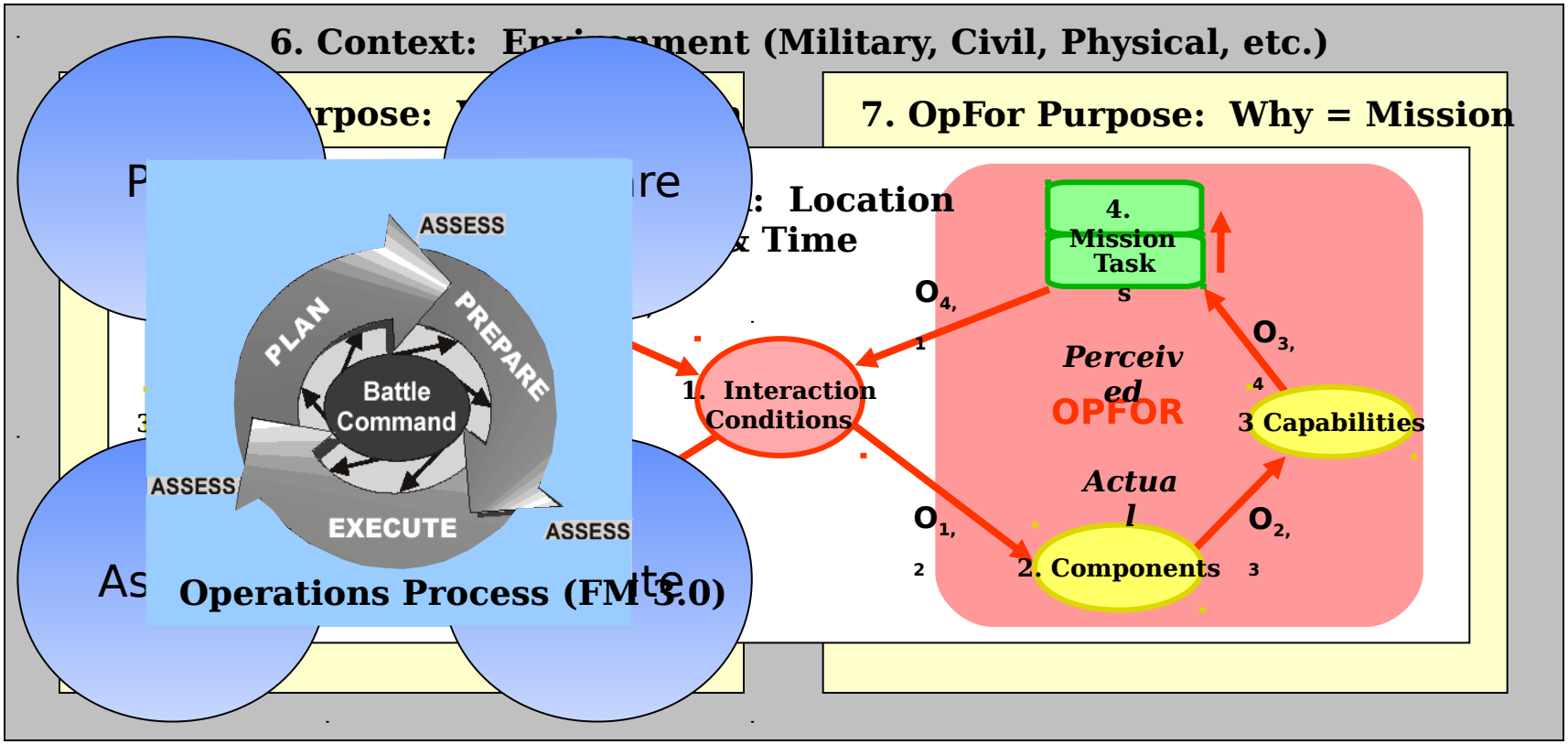


A Two-Sided Missions & Means Framework

Employment



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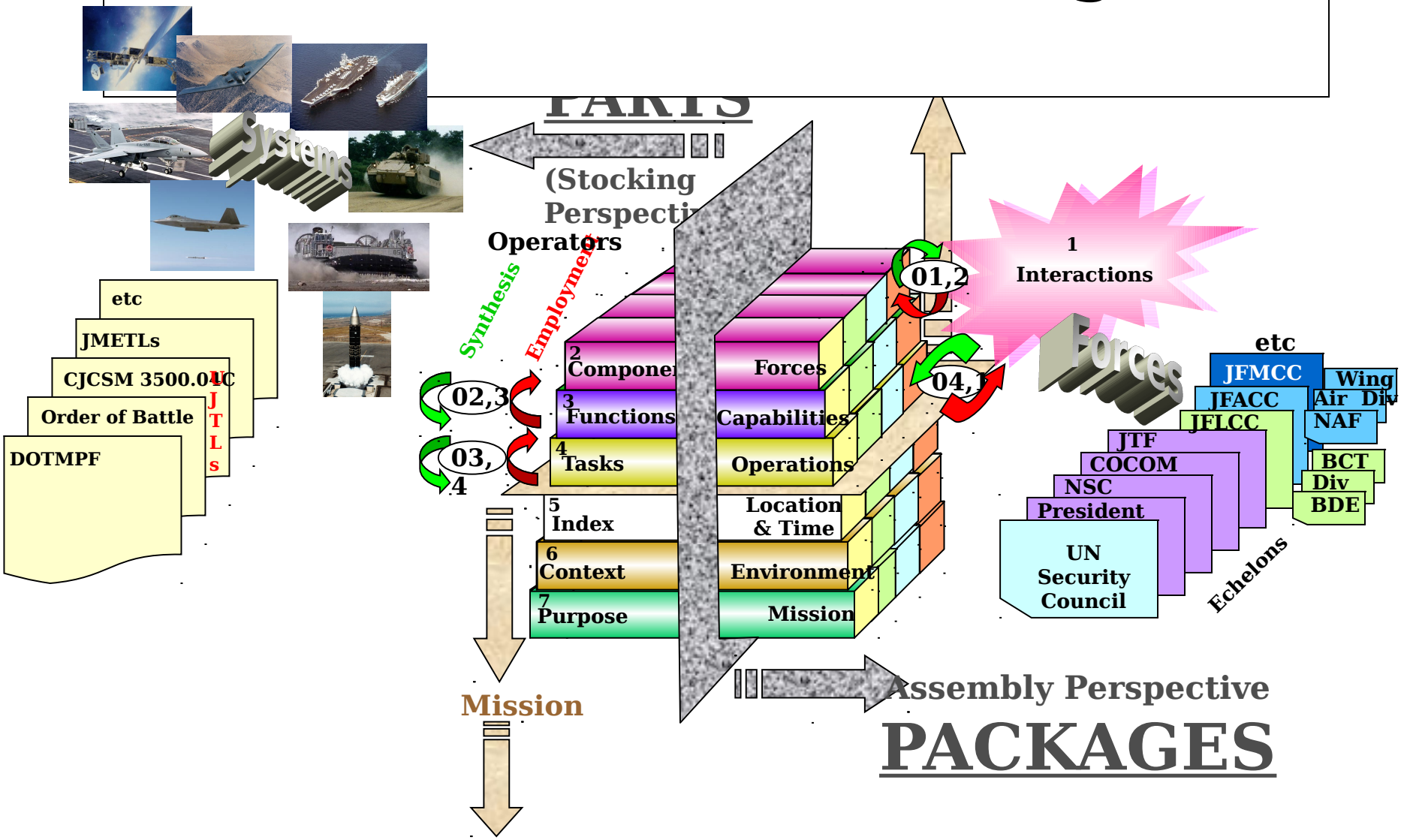
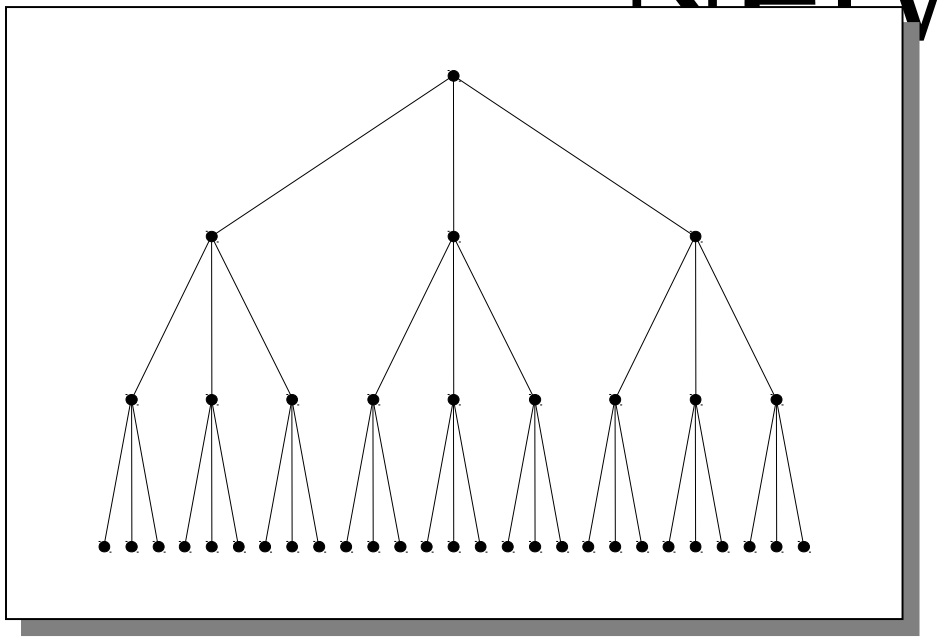
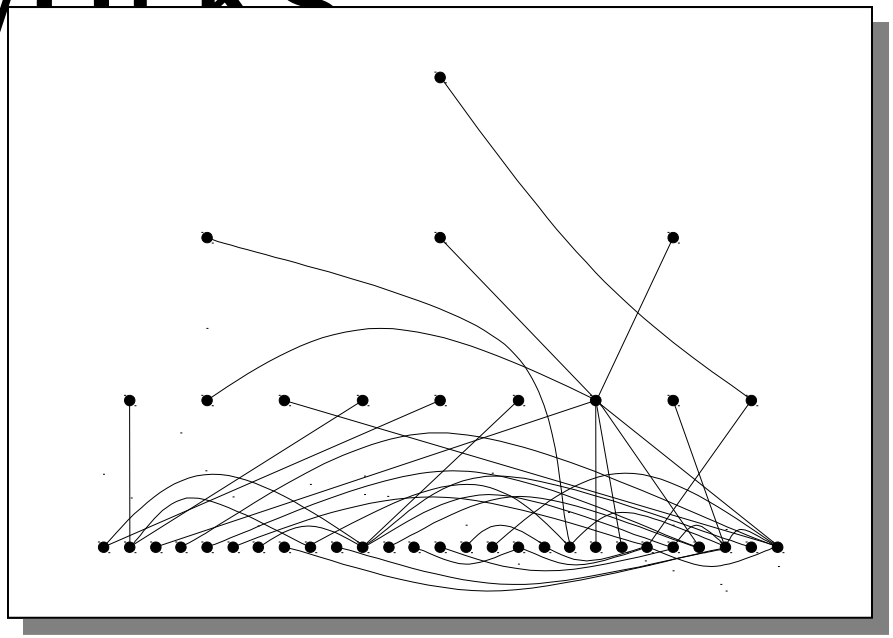
MMF: Parts and Packages



Chains versus Networks





Chain

Too brittle, simple pattern, simple control, scaled

"business end" most poorly connected, hard to reconfigure or change flow

Network

Very robust, complex pattern, complex control, scale free

"business end" best connected, natural to reconfigure or change flow

change flow

flow

Arthur K. Cebrowski, Director, Force Transformation, 18 January 2004

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Tasks Semantics by Level-of-War

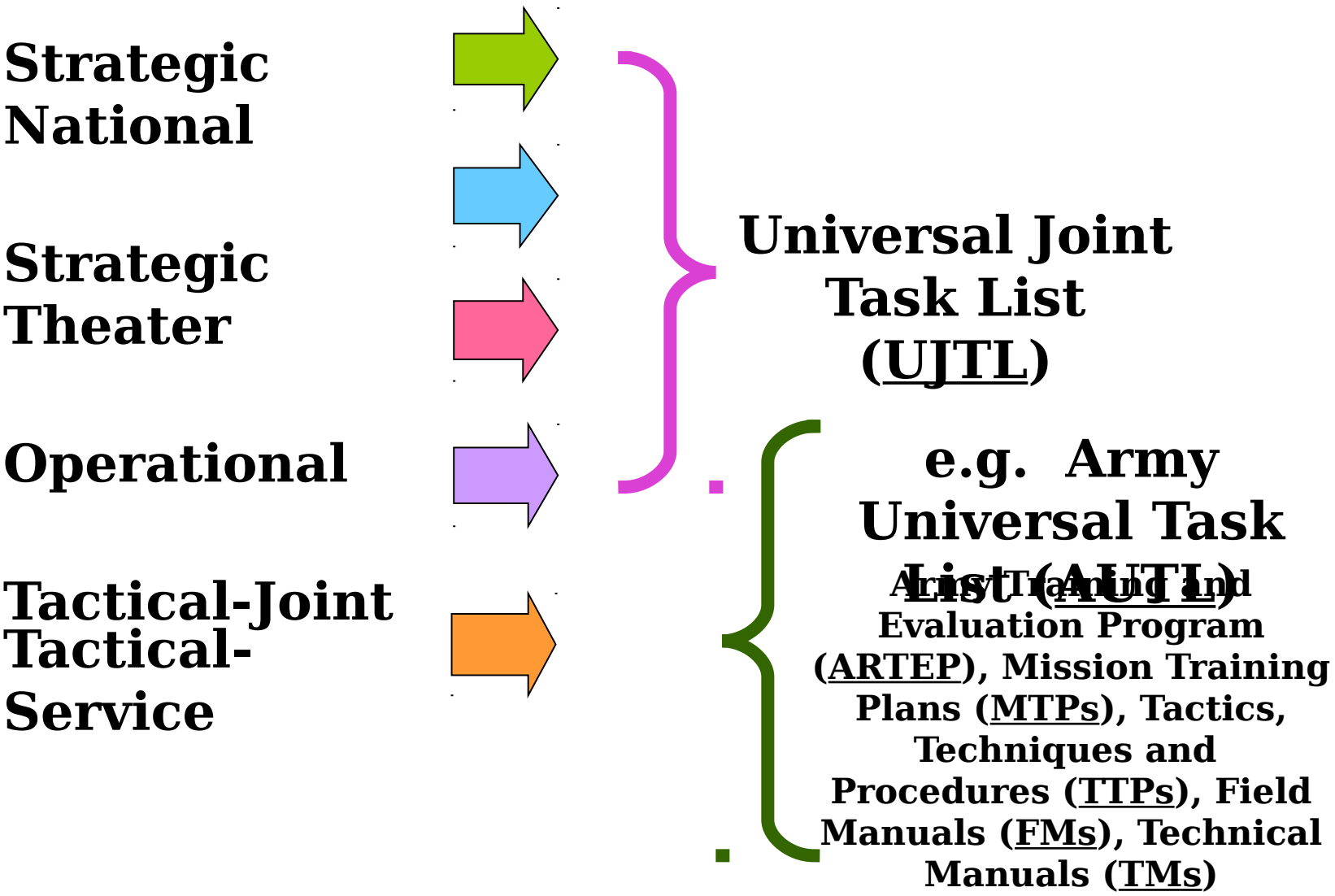
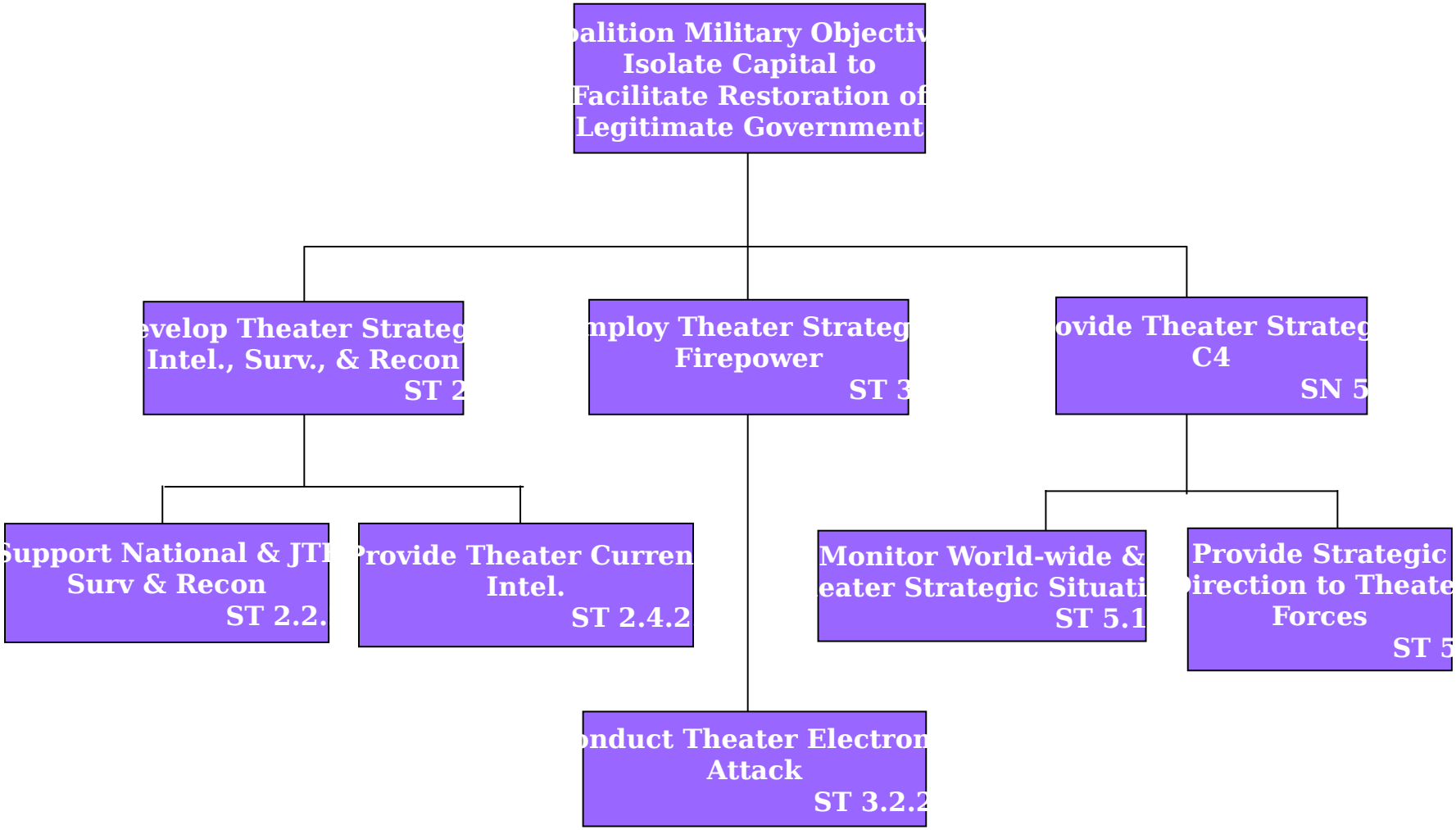
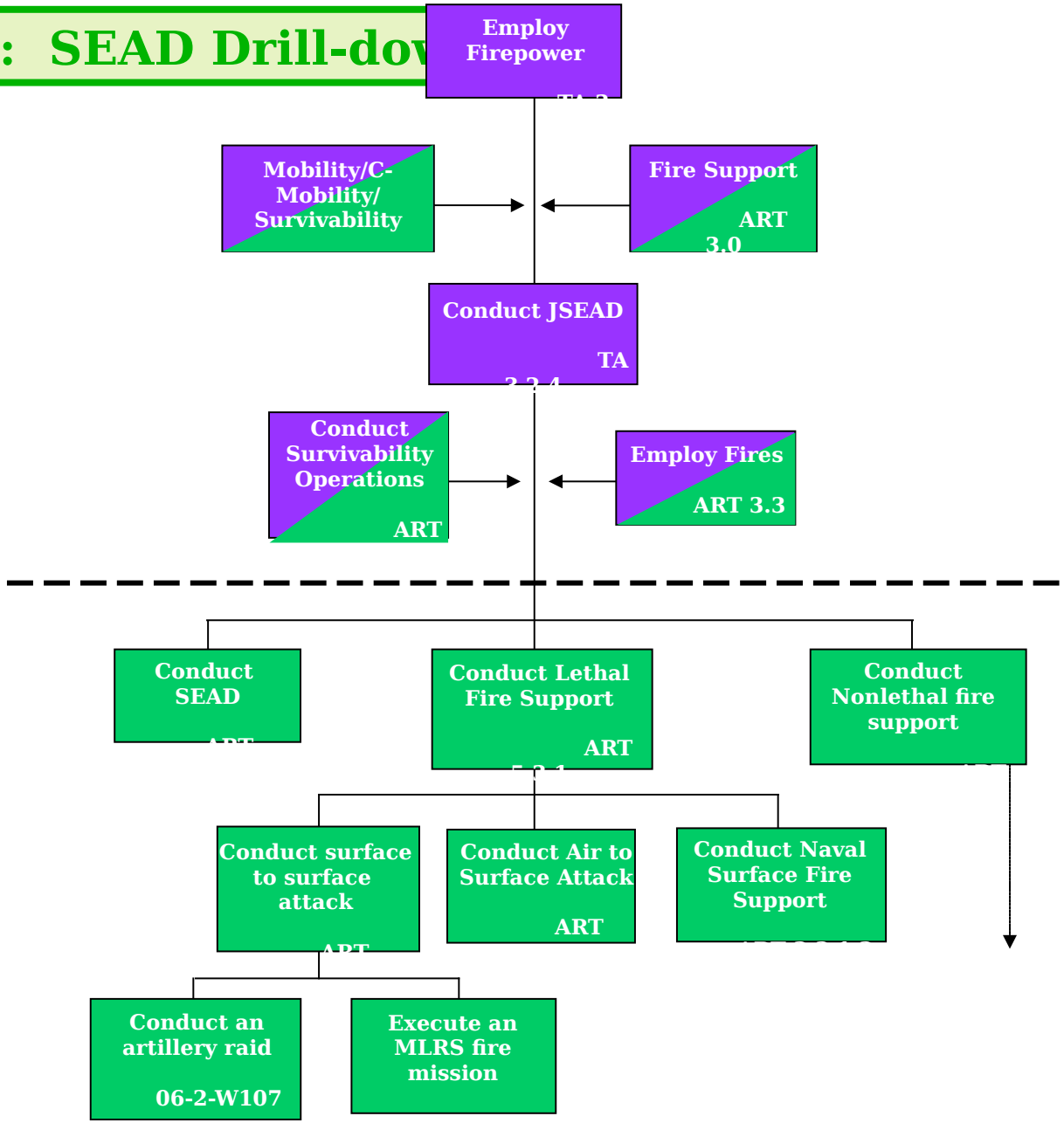

Strategic National
Strategic Theater
Operational
Tactical-Joint Tactical-Service
Universal Joint Task List (UJTL)
e.g. Army Universal Task List (AUTL)
Army Training and Evaluation Program (ARTEP), Mission Training Plans (MTPs), Tactics, Techniques and Procedures (TTPs), Field Manuals (FMs), Technical Manuals (TMs)

Figure 2

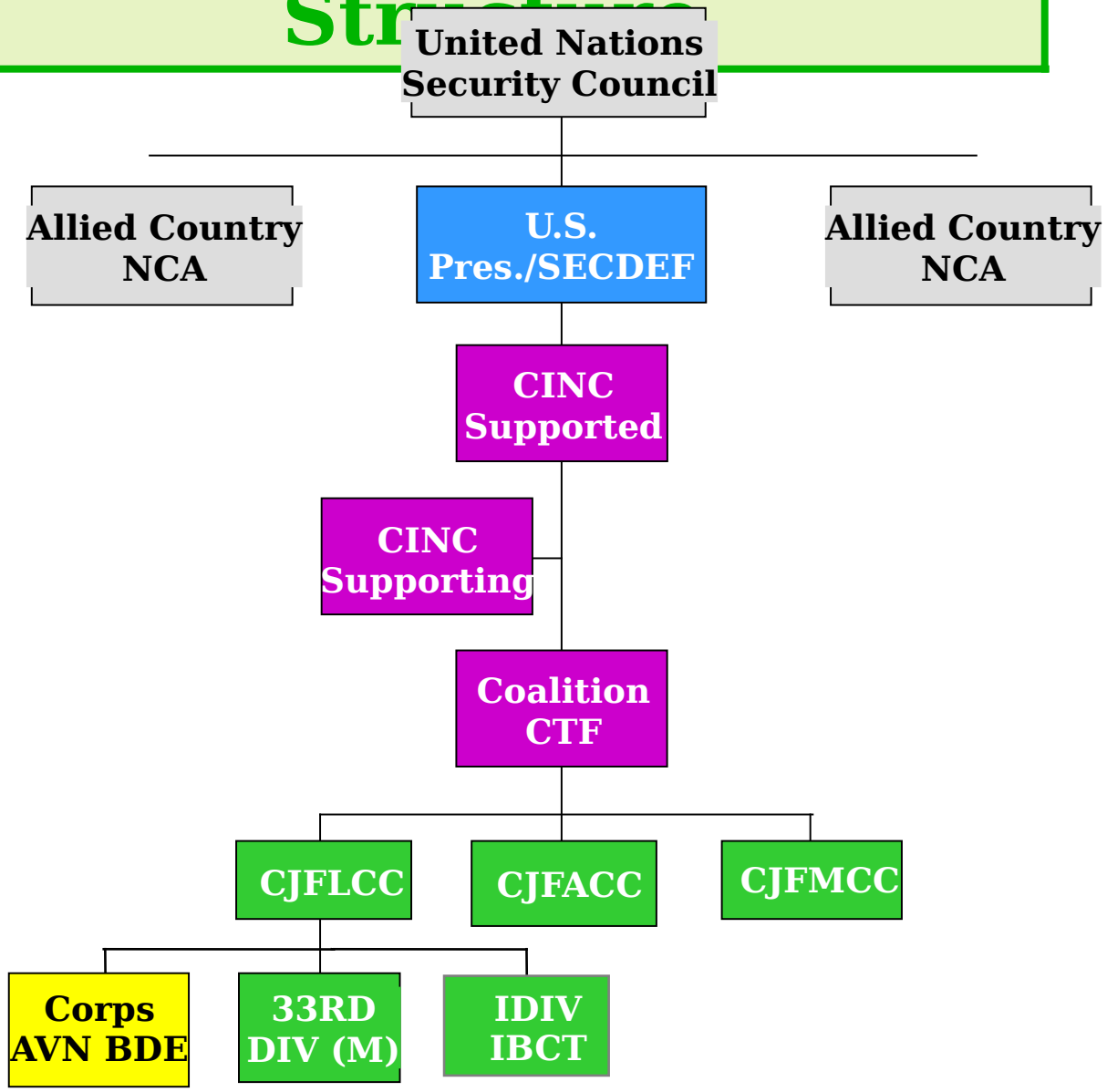
Level 4: Strategic Theater



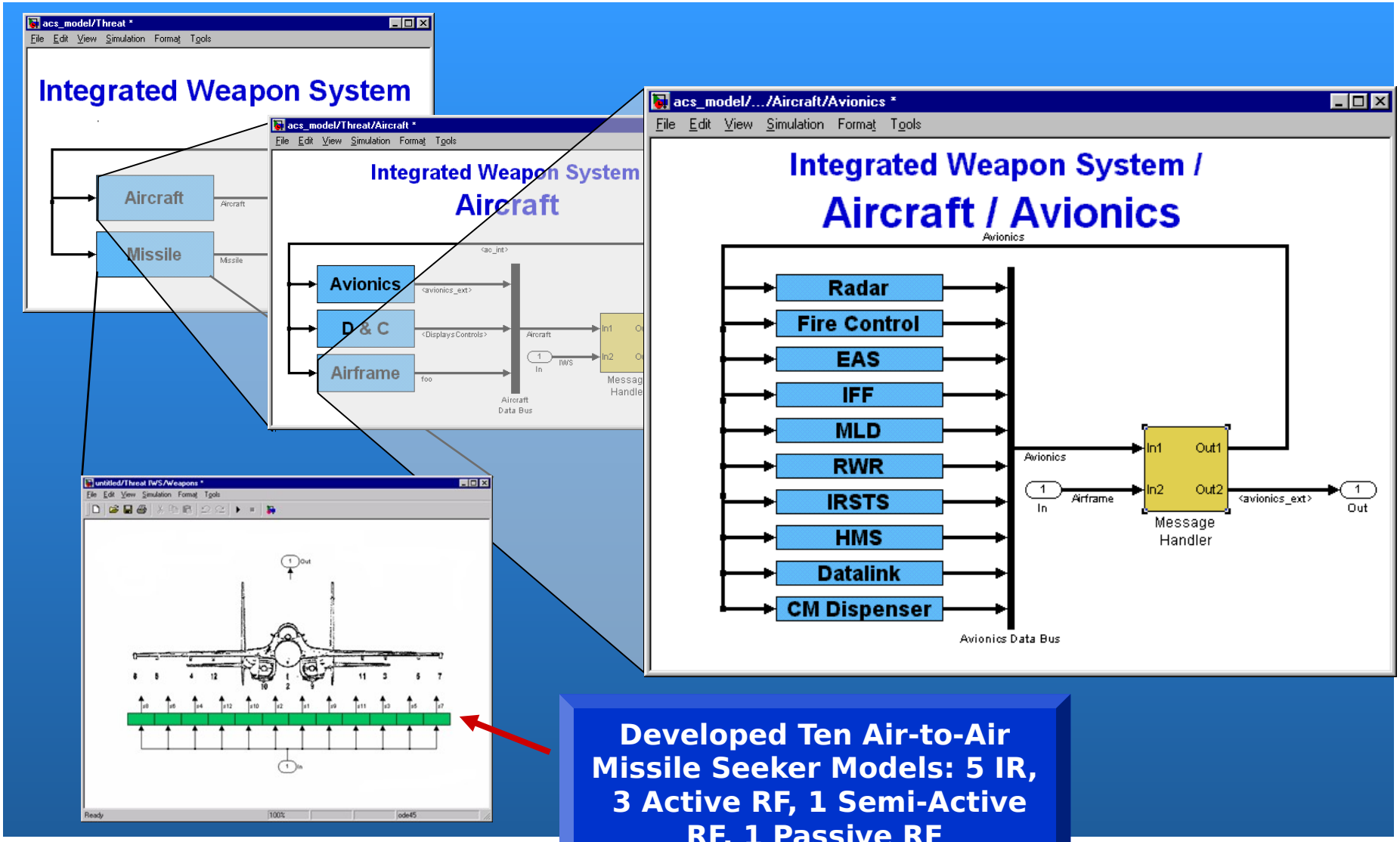
Level 4: SEAD Drill-dow



Level 2: Force Structure



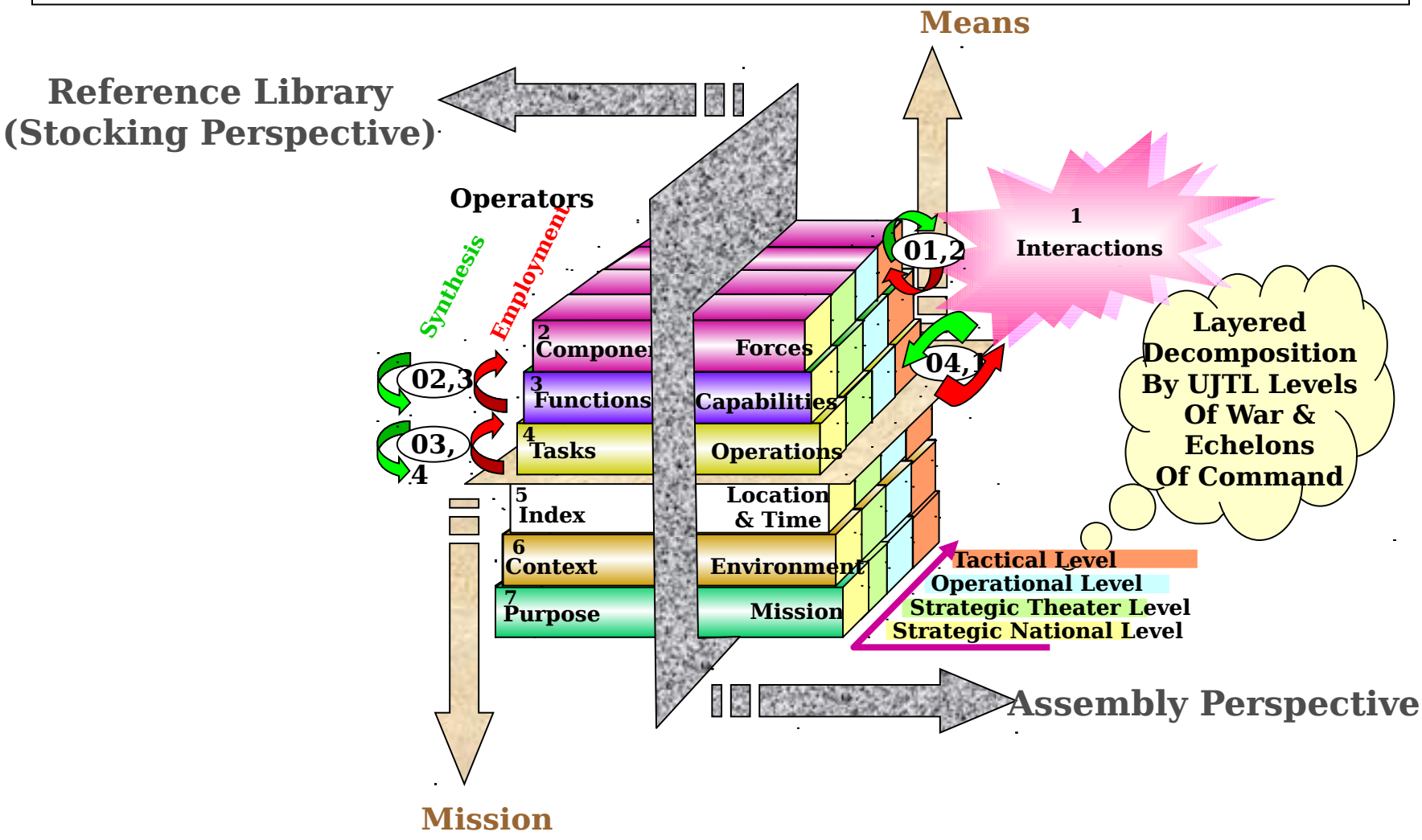
Hierarchical Integrated Aircraft Avionics Models



Developed Ten Air-to-Air Missile Seeker Models: 5 IR, 3 Active RF, 1 Semi-Active RF, 1 Passive RF

Source: National Air Intelligence Center

MMF: Layered Decomposition



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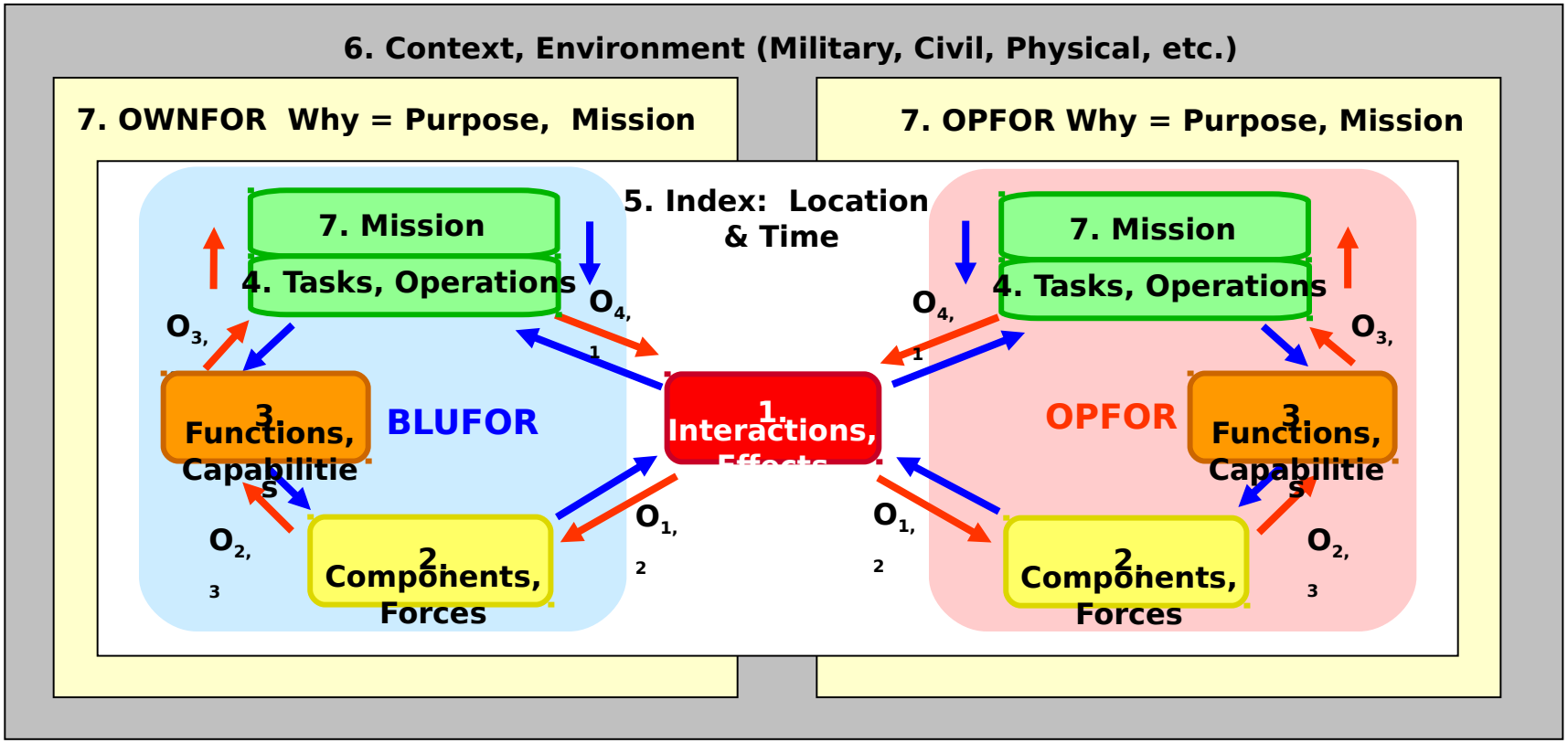


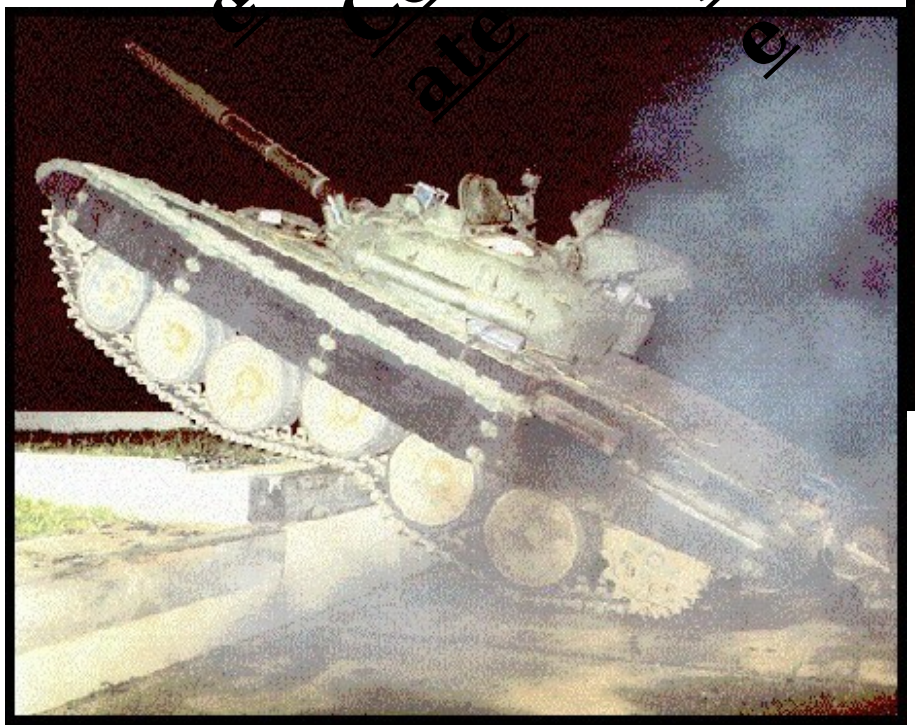
Figure 1

Traditional Capabilities

Move

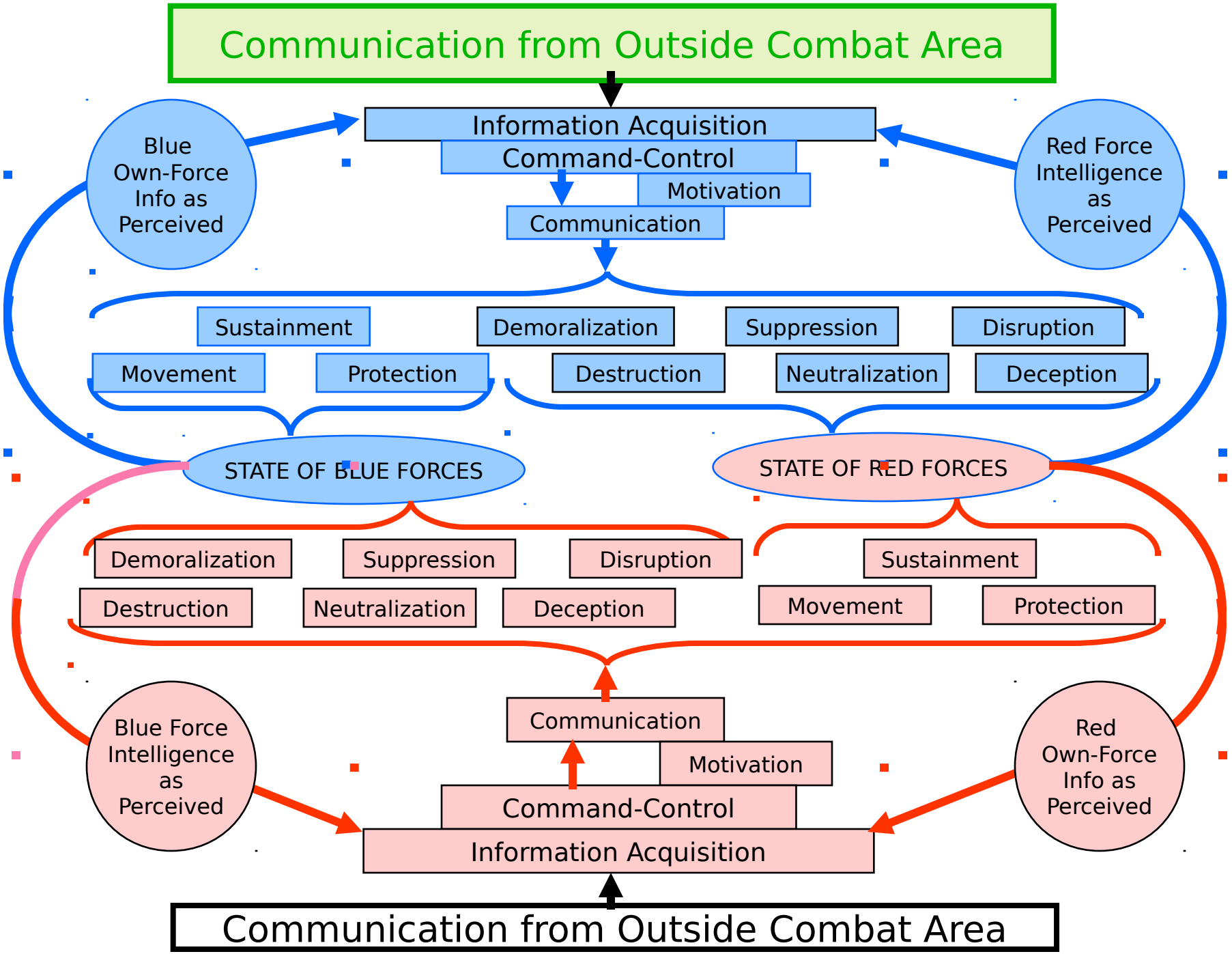
Communicate

Sense



Engage

Replenish



Source: A Concise Theory of Com

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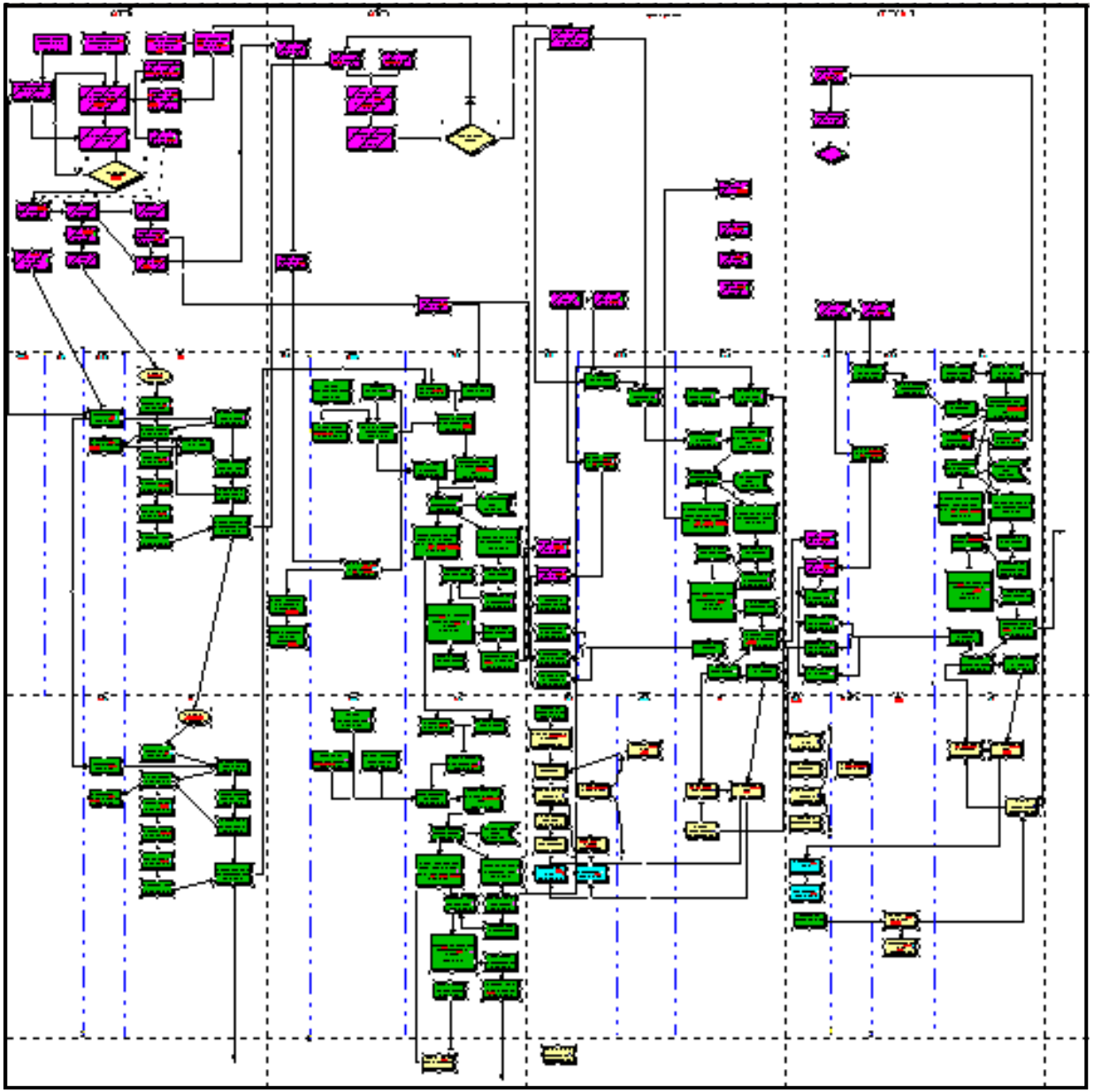
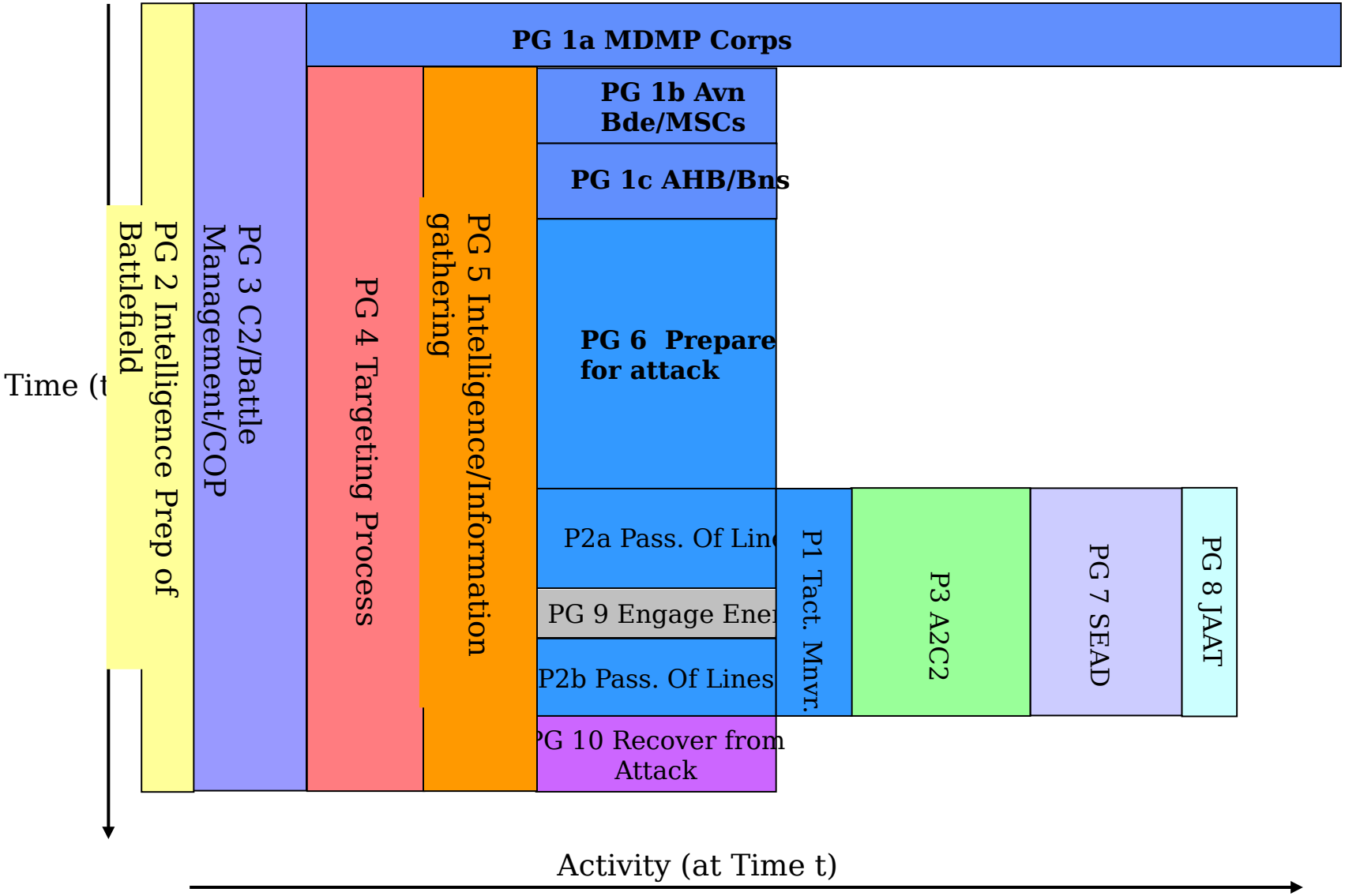
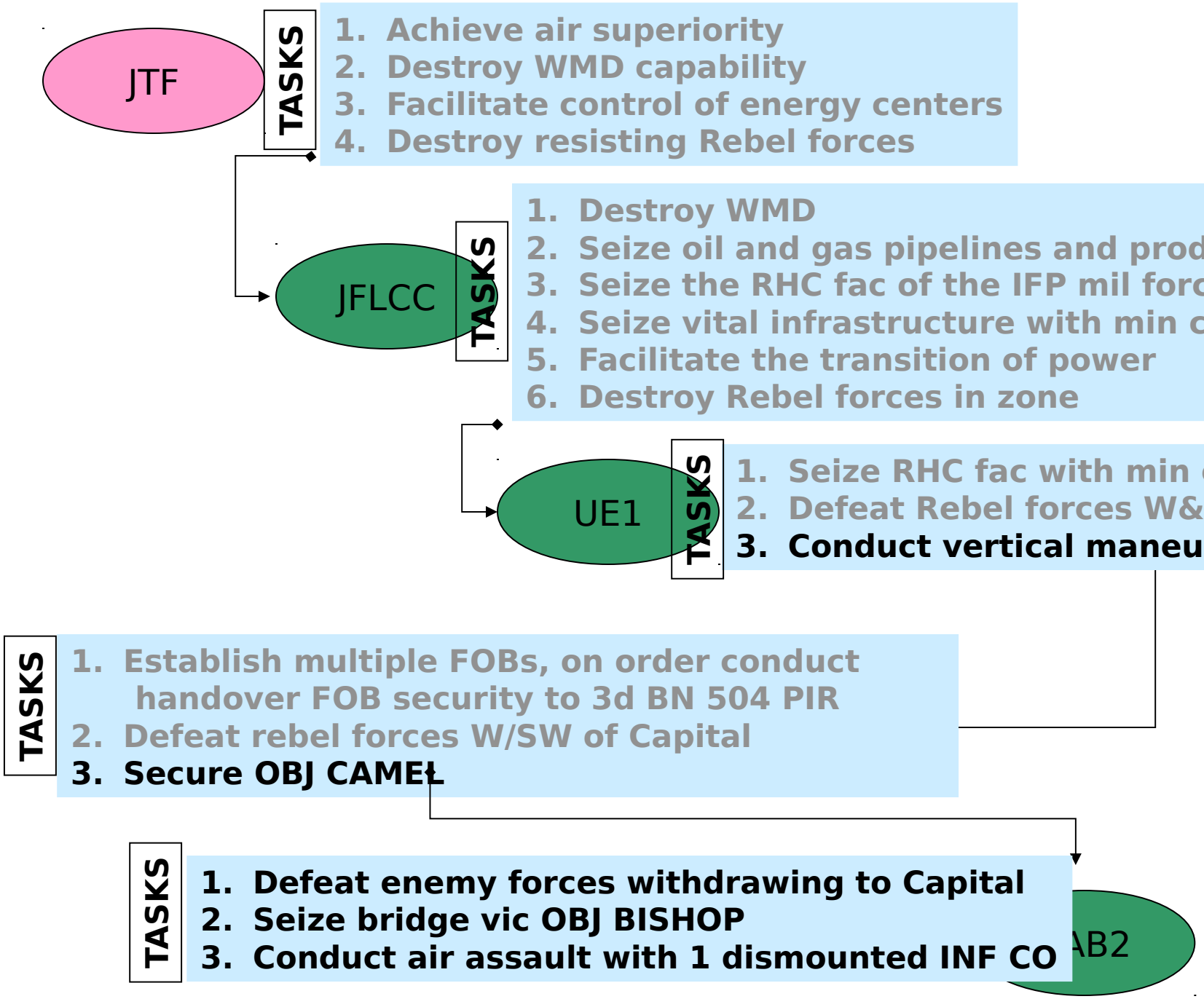
Task Explosion



Deep Attack Process Group

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3. Conduct air assault with 1 dismounted INF CO
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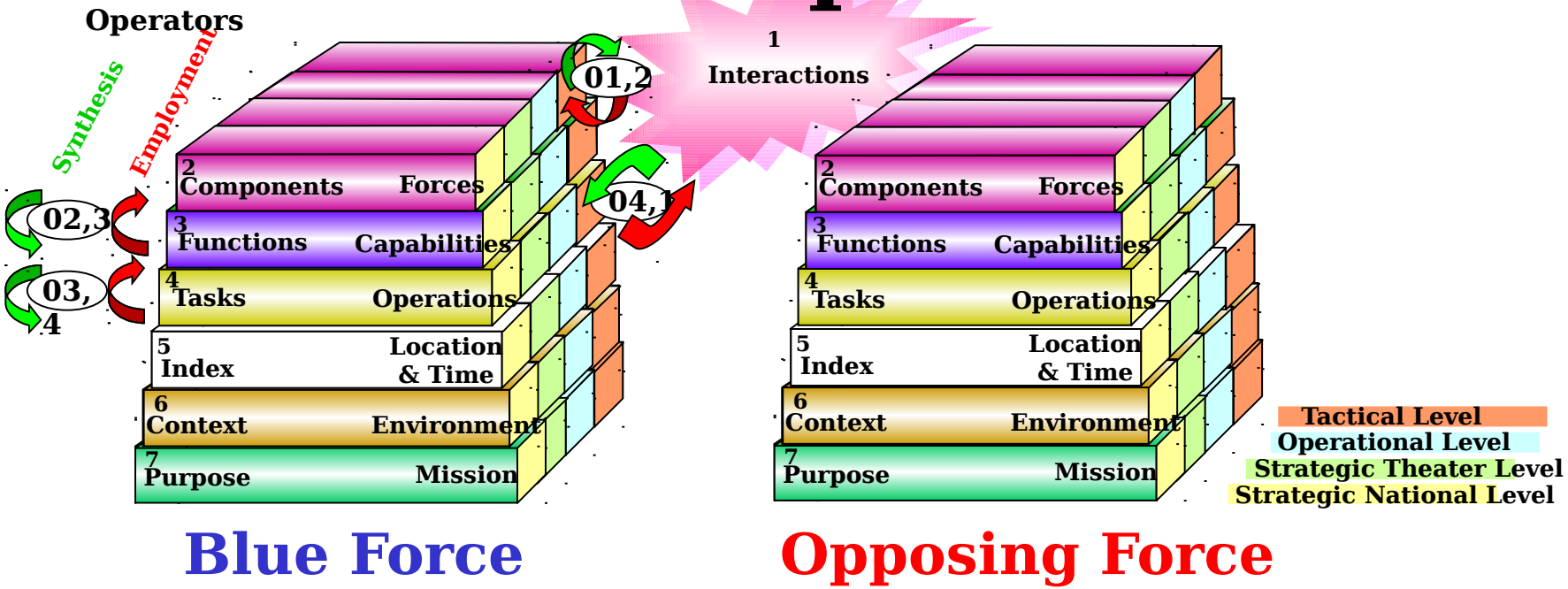
Two-Sided Representation



Blue Force **Opposing Force**